E7.3 1 0 9. 0. 6.

CR-133563

A STUDY FOR THE APPLICATION OF REMOTE SENSING DATA TO LAND USE PLANNING ON THE MISSISSIPPI GULF COAST.

Frank M. Ingels and Robert W. Boyd
Mississippi State University
Drawer EE
Mississippi State, MS   39762

August 1973
Interim Report for Period January 1973-August 1973

Prepared for:
GOODARD SPACE FLIGHT CENTER

Greenbelt, Maryland   20771

7 pp.

N O T I C E

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Study of Application of Remote Sensing Data to Land Use Planning on the Mississippi Gulf Coast		5. Report Date August 1973
		6. Performing Organization Code
7. Author(s) Franklin M. Ingels & Robert W. Boyd		8. Performing Organization Report No. I
9. Performing Organization Name and Address Mississippi State University P. O. Drawer EE Mississippi State, MS 39762		10. Work Unit No.
		11. Contract or Grant No. NAS5-21817
12. Sponsoring Agency Name and Address NASA-Goddard Space Flight Center GSFC-Technical Monitor Greenbelt, Maryland 20771		13. Type of Report and Period Covered Interim Report January 1973- August 1973
		14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

    Reports the current status of Contract NAS5-21817.

This project is currently involved in making visits to state and county agencies to obtain their reactions and opinions to the Mississippi Gulf Coast ERTS-A data. The data products being used in these interviews are produced by NASA/MTF-ERL and consist of computer plotted maps with eight classifications and a statistical summary in booklet form. Reaction by potential users has been very favorable, but cost will be largely determining factor in their ability to utilize ERTS-A data in recurring manner.

17. Key Words (Selected by Author(s)) Land Use Planning Application of ERTS-A data.	18. Distribution Statement		
19. Security Classif. (of this report) U	20. Security Classif. (of this page) U	21. No. of Pages	22. Price

*For sale by the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

/

PREFACE

The objective of this work is to develop a comparison of ERTS-1 data with
data from existing land use studies of a four county area of the Mississippi Gulf
Coast. ERTS-1 data will be analyzed by computer programs at the NASA-MTF-ERL
facility which delineate categories of interest.

These computer produced products will be analyzed by MSU personnel to
determine accuracy and suitability of the data for land use planning compared to
the present means of data collection for such studies.

Due to the schedule of the NASA-MTF-ERL personnel it will be early April
before the data products will be forthcoming. It will be at this point that the
main thrust of the project effort will begin.

Several meetings of project personnel have been held at the M. S. U. facility
and at the NASA-MTF-ERL facility to familarize the personnel with the data products,
and to discuss the meaning of accuracy when discussing the computer generated pro-
ducts.

INTRODUCTION

This report covers the period from January 1973 through July 1973 and describes
the progress of the project during this period.

During this period computer generated products have been furnished by the
NASA/MTF-ERL facility. These data products are being used in field interviews, by
Mississippi State University (M. S. U.) investigators. These interviews, conducted
with state and county agencies, are concerned with various aspects of Land Use
Planning on the Mississippi Gulf Coast.

Several meetings of M. S. U. personnel and the NASA/MTF-ERL personnel have
been conducted during this period. A schedule for delivery of data products to
the M. S. U. team has been determined and was forwarded in the last Type I report
of June 8, 1973.

This project is essentially on the schedule as stated in the June 8, 1973, Type I report.

PROJECT ORGANIZATION AND STATUS

There has been no change in the project organization or status since the last Type II report of February 1973.

In so far as the scheduling is concerned the three phase schedule that was listed in the Type I report of June 8, 1973 is still current. To date the phase I and phase II steps have been accomplished by the NASA/MTF-ERL and M. S. U. personnel. The phase III portion as indicated in the June 8, 1973 report is currently underway.

A meeting was held with the NASA/MTF-ERL personnel to determine the classification categories and schedule of release of the computer generated data products that they will furnish to the M. S. U. investigators. A schedule of data delivery and classification categories was furnished in the June 8, 1973 Type I report.

To date the M. S. U. personnel have received the computer generated data maps and the statistical summaries for the three counties.

In addition we have received the data maps and statistical summaries for some selected townships in the three county area.

DISCUSSION OF DATA RECEIVED AND OF THE ANALYSIS LOGS

These data products are excellent in quality and have been well received by the M. S. U. personnel and by the agency personnel contacted so far.

One comment which is worthy of note concerns a desire for a computer generated data set that illustrates only one category at a time. Many people are somewhat confused by the presentation of all the information on one map.

The cost factor of these types of data services will be significant consideration when the agencies visited consider utilization of the data products in a recurring manner.

At this stage it is too early to determine the actual cost of these products to the user. For one thing the actual cost will be a function of the number of users, the required write off of the hardware-missle apparatus, etc.

However, it is conceivable at this time to state a desire by many agencies to obtain this type of information on a regular basis. A detailed report concerning the agencies visited and their reaction will be forthcoming at a later date.

After receiving the data products from NASA/MTF-ERL a meeting was scheduled at the MTF facility to discuss the data products in the form received, the accuracy of the data and the meaning of the term accuracy is applied to computer generated maps. Several ideas for modification of the future data products will no doubt evolve during usage of the data products this summer.

Analysis of the ERTS-A photography which we received has been conducted since the receipt by M. S. U. of the first photographs. This analysis has been an overall evaluation of the degradation of the data due to data drop out of the system or cloud cover.

This analysis procedure has undergone a small change in that a computer program has been written to alleviate some of the drudgery of determining the test site coverage by any ERTS-1 pass. A more detailed report on this activity will be included in the next report.

PROGRAM FOR THE NEXT REPORTING INTERVAL

Visitation of agencies around the state with our data products will be completed. An analysis of seasonal change effects on the data will be made if NASA Goddard is able to provide NASA/MTF-ERL with the May 4, 1973 data. Some recommendations as to what constitutes an optimum schedule of data reception and what seasonal time of the year the data is desired will be attempted. This will be a summarized result of our visitation program and the computer generation problems encountered by NASA/MTF-ERL.

CONCLUSIONS

We are able to state at this point that agencies responsible for Land Use

Planning in Mississippi are interested in and desire to purchase data products

such as those we are demonstrating. However it is not possible at this time to

estimate what cost level those agencies can afford nor what time schedule they

would require for such data. Questions to be answered are: how often do they

need this data, what time period is allowable after acquisition by system before

the data becomes obsolete, what is the cost factor worth on a single usage and

repeated usage basis?

To some extent we hope to answer some of these questions during the remainder

of this program.

The following points do seem evident at this time:

1. The difference in the data base of the ERTS-1 system verses the data
   base for the conventional system is such that it is difficult to com-
   pare the computer generated maps of ERTS-1 to the Land Use Classification
   maps done by conventional methods. The biggest factor is the difference
   in the classification categories. For instance ERTS-1 data is not able
   to make distinct classifications differences between industrial, urban,
   commercial and residential areas, rather ERTS-1 must make a composite
   group of concrete/asphalt.

2. ERTS-1 computer generated maps do have the advantage of not tiring or
   overlooking an area when making the maps. A good example of this is the
   Broadwater Pier Complex on the Biloxi, MS coast. The Land Use Classifica-
   tion maps made by conventional methods by a professsional consulting
   company overlooked this area and it was left off the map. This area
   however is strickingly shown on the ERTS-1 computer generated map. Thus
   it means ERTS-1 data products will be thorough.

3. Another point in favor of the ERTS-1 data is the classification of undeveloped
   land, usually shown as a single classification by conventional methods,
   into it natural features such as forested, marsh, dry, cultivated, etc.

4. However a point of contentions for ERTS-1 data is the confusion wrought
   by the myrid of colors which are printed. This is due to nature of the
   classifications scheme which treats each cell without an "interpretive
   memory" of the area surrounding it. That is, the human classification
   will tend to group like areas together while the ERTS-1 classification will
   name each cell if possible.

In all we see some distinct advantages to the use of ERTS-1 data in conjunction with, but not replacing, the more conventional methods.

RECOMMENDATIONS

We have no recommendations to offer at this time.